

The contribution of the X chromosome to the speciation of hares (*Lepus spp.*) in the Iberian Peninsula

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Both theoretical and empirical studies suggest that the X chromosome has a disproportionate effect on the establishment of reproductive isolation between species. Thus differentiation between closely related species that still exchange genes is expected to be higher along the X chromosome than the autosomes. Frequently reported hybridization among hare species (*Lepus spp.*) makes this group an interesting model to investigate the importance of the X chromosome in speciation. Three hare species thrive in Iberia: *Lepus europaeus* in the Pyrenean foothills, *L. castroviejo* in the Cantabrian mountains and *L. granatensis* in the rest of the Peninsula. A hybrid zone between *L. europaeus* and *L. granatensis* was described in which we studied X chromosome sequence variation at four loci, and detected no evidence of introgression. In comparison to 10 autosomal loci previously studied, the X shows higher differentiation between these two species, and the effect is more pronounced at the two X-loci close to the centromere than at the two telomeric ones, possibly as a consequence of reduced centromere-proximal recombination. Previous studies had revealed in northern populations of *L. granatensis* extensive introgression of mtDNA from *L. timidus*, attesting of extensive past hybridization with this anciently present arctic/boreal species. We analyzed sequence variation at eight markers distributed along the X chromosome in samples of *L. timidus* and of *L. granatensis* from this zone of mtDNA introgression. We found no clear evidence of X introgression, except at one telomeric locus for which it was extensive. Differentiation between these two species was slightly but not significantly higher for the X than the autosomal loci previously studied. The effects of ancestrally shared polymorphism and secondary introgression between these two closely related species appear difficult to disentangle. These analyses thus do not exclude limited X-chromosome exchanges and demonstrate at least in one instance extensive introgression.

[This work was partially funded by FEDER funds through the COMPETE program and Portuguese national funds through the FCT – Fundação para a Ciência e a Tecnologia – PTDC/BIA-EVF/111931/2009 research project.]

Oral communication